

## CLAIMS

- 1        1. An optical device comprising:
  - 2              a plurality of high index layers;
  - 3              a plurality of low index layers;
  - 4              wherein said optical device is formed by creating alternating layers of said
  - 5              plurality of high index layers and said plurality of low index layers, such that
  - 6              electricity and heat is conducted through said optical device.
- 1        2. The optical device of claim 1 further comprising that the index difference  
2           between said a plurality of high index layers and said plurality of low index layers is  
3           greater than 0.3.
- 1        3. The optical device of claim 2, wherein the said plurality of high index layers  
2           are Indium Tin Oxides.
- 1        4. The optical device of claim 2, wherein said plurality of high index layers are  
2           doped diamonds.
- 1        5. The optical device of claim 2, wherein said plurality of low index layers are  
2           doped silicon.
- 1        6. The optical device of claim 2, wherein said plurality of low index layers  
2           possess wide band gaps.
- 1        7. The optical device of claim 6, wherein said wide band gaps ensure that the loss  
2           in said optical device will be due to scattering off carriers.

- 1           8. The optical device of claim 6, wherein said low index layers exhibit low  
2 absorption losses.
- 1           9. The optical device of claim 1, wherein said alternating layers form tunneling  
2 junctions between said plurality of high index layer and said low index layers.
- 1           10. The optical device of claim 2, wherein said plurality of high index layers  
2 result in large reflectivity over a wide frequency bandwidth.
- 1           11. The optical device of claim 1, wherein said optical device is fabricated by  
2 sputtering said alternating layers.
- 1           12. The optical device of claim 1, wherein said optical device is fabricated by  
2 bonding.
- 1           13. The optical device of claim 1, wherein said optical device is fabricated by  
2 utilizing smart cut technique.
- 1           14. The optical device of claim 1, wherein said optical device is fabricated by  
2 utilizing polishing technique.
- 1           15. A method of forming an optical device, comprising  
2           providing a plurality of high index layers;  
3           providing a plurality of low index layers;  
4           wherein said optical device is formed by creating alternating layers of said  
5           plurality of high index layers and said plurality of low index layers, such that  
6           electricity and heat is conducted through said optical device.

1           16. The method of claim 15 further comprising that the index difference between  
2           said a plurality of high index layers and said plurality of low index layers is greater than  
3           0.3.

1           17. The method of claim 16, wherein the said plurality of high index layers are  
2           Indium Tin Oxides.

1           18. The method of claim 16, wherein said plurality of high index layers are doped  
2           diamonds.

1           19. The method of claim 16, wherein said plurality of low index layers are doped  
2           silicon.

1           20. The method of claim 16, wherein said plurality of low index layers possess  
2           wide band gaps.

1           21. The method of claim 20, wherein said wide band gaps ensure that the loss in  
2           said optical device will be due to scattering off carriers.

1           22. The method of claim 20, wherein said low index layers exhibit low  
2           absorption losses.

1           23. The method of claim 15, wherein said alternating layers form tunneling  
2           junctions between said plurality of high index layer and said low index layers.

1           24. The method of claim 16, wherein said plurality of high index layers result in  
2           large reflectivity over a wide frequency bandwidth.

- 1           25. The method of claim 15, wherein said optical device is fabricated by  
2 sputtering said alternating layers.
- 1           26. The method of claim 15, wherein said optical device is fabricated by bonding.
- 1           27. The method of claim 15, wherein said optical device is fabricated by utilizing  
2 smart cut technique.
- 1           28. The method of claim 15, wherein said optical device is fabricated by utilizing  
2 polishing technique.
- 1           29. A Fabry-Perot device comprising:  
2                 a plurality of high index layers;  
3                 a plurality of low index layers;  
4                 a top mirror that includes alternating layers of said plurality of high index  
5                 layers and said plurality of low index layers;  
6                 a cavity structure that includes a bulk of a selective material; and  
7                 a bottom mirror that includes alternating layers of said plurality of high  
8                 index layers and said plurality of low index layers;  
9                 wherein said top mirror and bottom mirror allow electricity and heat to be  
10              conducted through said Fabry-Perot device.
- 1           30. A process for forming an optical device, comprising  
2                 providing a plurality of high index layers;  
3                 providing a plurality of low index layers;

4                   wherein said optical device is formed by creating alternating layers of said  
5                   plurality of high index layers and said plurality of low index layers, such that  
6                   electricity and heat is conducted through said optical device.

1                 31. The process of claim 30 further comprising that the index difference between  
2                 said a plurality of high index layers and said plurality of low index layers is greater than  
3                 0.3.

1                 32. The process of claim 31, wherein the said plurality of high index layers are  
2                 Indium Tin Oxides.

1                 33. The process of claim 31, wherein said plurality of high index layers are doped  
2                 diamonds.

1                 34. The process of claim 31, wherein said plurality of low index layers are doped  
2                 silicon.

1                 35. The process of claim 31, wherein said plurality of low index layers possess  
2                 wide band gaps.

1                 36. The process of claim 35, wherein said wide band gaps ensure that the loss in  
2                 said optical device will be due to scattering off carriers.

1                 37. The process of claim 35, wherein said low index layers exhibit low  
2                 absorption losses.

1                 38. The process of claim 30, wherein said alternating layers form tunneling  
2                 junctions between said plurality of high index layer and said low index layers.  
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1           39. The process of claim 31, wherein said plurality of high index layers result in  
2           large reflectivity over a wide frequency bandwidth.

1           40. The process of claim 30, wherein said optical device is fabricated by  
2           sputtering said alternating layers.

1           41. The process of claim 30, wherein said optical device is fabricated by bonding.

1           42. The process of claim 30, wherein said optical device is fabricated by utilizing  
2           smart cut technique.

1           43. The process of claim 30, wherein said optical device is fabricated by utilizing  
2           polishing technique.

1           44. A method of forming a Fabry-Perot device comprising:  
2                 providing a plurality of high index layers;  
3                 providing a plurality of low index layers;  
4                 forming a top mirror that includes alternating layers of said plurality of  
5                 high index layers and said plurality of low index layers;  
6                 forming a cavity structure that includes a bulk of a selective material; and  
7                 forming a bottom mirror that includes alternating layers of said plurality of  
8                 high index layers and said plurality of low index layers;  
9                 wherein said top mirror and bottom mirror allow electricity and heat to be  
10              conducted through said Fabry-Perot device